

84 01204

SFCA-0117

AN ANALYSIS:  
THE FINANCIAL FEASIBILITY OF PUBLIC TRANSIT RECOMMENDATIONS IN THE  
SAN FRANCISCO DOWNTOWN PLAN

INSTITUTE OF GOVERNMENTAL  
STUDIES LIBRARY

MAY 2 1984

UNIVERSITY OF CALIFORNIA

PREPARED BY A LEE KNIGHT  
FOR THE SAN FRANCISCO  
CHAMBER OF COMMERCE

FEBRUARY 1984



# SAN FRANCISCO CHAMBER OF COMMERCE

April 19, 1984

Dear Reader,

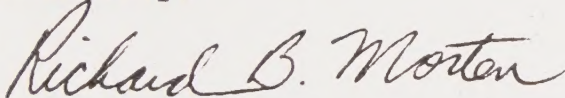
The analysis for the Strategic Plan and the Downtown Plan both reached a similar conclusion: to accommodate new job growth in San Francisco there must be increased capacity and use of transit by downtown workers.

The Downtown Plan has identified a number of transit implementing actions designed to increase transit capacity, to achieve significant increases in transit ridership through service improvements, and to mitigate environmental impacts on major transportation corridors. The financial feasibility of these implementing actions was not analyzed.

The Chamber of Commerce decided to have the financial feasibility of the Downtown Plan's transit implementing actions analyzed. We contracted with a Mr. A. Lee Knight who has outstanding professional public transit qualifications. Mr. Knight, for seven years, was a Transportation Planner/Financial Analyst for the Metropolitan Transportation Commission, and has been a Senior Consultant to the Assembly Transportation Committee. He is currently working for the San Francisco Public Utilities Commission as a Planning Manager for the Market Street Planning Project.

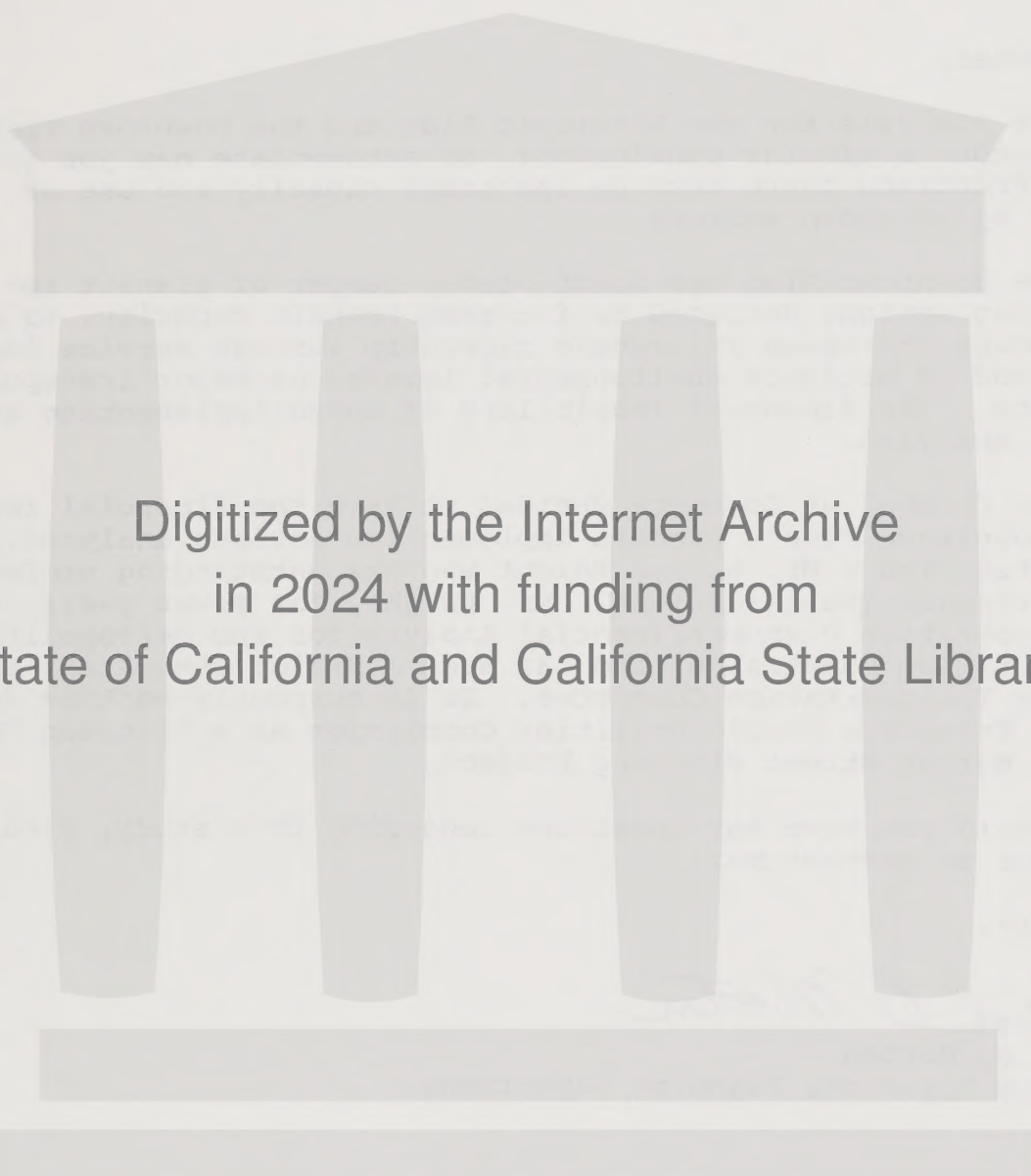
Should you have any questions regarding this study, please feel free to contact me.

Sincerely,



Richard B. Morten  
Associate Director, Planning Department





Digitized by the Internet Archive  
in 2024 with funding from  
State of California and California State Library

<https://archive.org/details/C124877529>

## EXECUTIVE SUMMARY

The major authority for allocating public transit capital resources in the nine county San Francisco Bay Area rests with the Metropolitan Transportation Commission (MTC). MTC is the regional transportation planning agency and the designated recipient of transit grants from state and federal authorities, whose programs comprise the bulk of such funding. Recently, the MTC staff completed its projection of capital resources potentially available to Bay Area transit, calling it a "New Transit Rail Starts and Extensions Program."

Accepting MTC's underlying assumptions in conducting this study, the Bay Area as a whole appears to be in a strong fiscal position to further expand and improve its public transit infrastructure.

The Department of City Planning's draft Downtown Plan for San Francisco recommends a series of transit "implementing actions" which, taken in the context of MTC's "new starts" resource projections, appear to be eminently fundable if the city can successfully compete with other Bay Area jurisdictions for regional discretionary resources controlled by MTC. This in turn presumes the region's successful competition for funds at both the state and national levels.

The Downtown Plan's transit implementing actions are:

Recommended for financing and development:

- \* o Current five-year plans (1984-88) for all transit operators serving San Francisco, with specified additions (not including "New Starts")
- \* o Muni Metro turnaround at the Embarcadero
  - o Muni Metro extension to 4th & Townsend
  - o BART to San Francisco Airport
  - o Improved/expanded Transbay Terminal



- o Discount Muni transfer agreements with all regional transit operators serving San Francisco
- o Dispersed Golden Gate and SamTrans curbside loading in the downtown area.

Recommended for alternatives analysis feasibility study ONLY:

- o Muni Metro service to Geary/Third Street corridors
- o (Undefined) light-rail service to Marin County via the Golden Gate Bridge
- o Extension of SP/CalTrain to a new downtown terminal
- o Additional public/private ferry service to downtown

These transit actions incorporated in the Downtown Plan exhibit three descending levels of priority:

1) Projects which must be implemented to accommodate growth in San Francisco-oriented commute travel anticipated by the year 2000 (marked with an asterisk in the previous list of projects recommended for financing and development);

2) Projects which, while not mandatory to accommodate growth, are recommended for implementation in order to achieve significant increases in transit ridership, to improve operating efficiencies and labor productivity, and to mitigate environmental impacts of major transportation corridors on communities through which they pass (the remainder of projects recommended for financing and development);

3) Projects which are recommended for further study ONLY; should additional study bear out their cost-effectiveness based on a rationale similar to that cited in the previous priority group, implementation should be considered.

It may be concluded from MTC's capital resource projections that the highest priority transit projects -- those incorporating current Muni and other regional carrier five-year capacity expansion plans (not including "New Starts") as the principal element -- are virtually assured of funding. Completion of these capacity expansion plans, included in MTC's Regional Transportation Improvement Program (RTIP) and totalling just over \$1 billion, provides the bulk of increased peak-period capacity for transit to, from and within downtown San Francisco required by the Downtown Plan's "appropriate level's" of

office space development. Major elements of the five-year plans incorporated in MTC's RTIP include:

FIVE-YEAR PLAN (RTIP) IMPROVEMENTS  
E+C SYSTEMS\*

Muni

- o Metro Turnaround and break-out at the Embarcadero (Re-defined "New Start" project)
- o Bus and trolley rehabilitation and replacement program
- o Rail and non-rail support facilities

BART

- o Daly City tail track and storage yard (Re-defined "New Start" project)
- o 150 rapid transit cars
- o Train control/computer upgrading
- o Fire-Hardening safety improvements
- o Third Oakland subway

CalTrain

- o 18 new locomotives and 63 passenger cars (Re-defined "New Start" project)
- o Upgrade Peninsula stations and parking facilities

AC Transit

- o Conversion of transbay vehicles from standard to articulated with support facilities

Golden Gate, SamTrans, and Santa Clara transit

- o Expanded operating fleets with support facilities
- o Guadalupe Corridor light rail line (Re-defined "New Start" project)



No "New Start" projects are included in the preceding list of highest priority projects except those redefined by MTC, as noted. MTC's transit capital resource projections for the region, extrapolated to the year 1993, total between \$1 and 2 billion over and above the top-priority needs of the "existing + committed" (E+C) transit system\*. It is from this money that the Downtown Plan's transit implementing actions would be funded. Table S-1 illustrates this net resource base for the 5-year RTIP period, the 10-year period projected by MTC for "new starts," and the 17-year term associated with the Downtown Plan.

---

NOTE:

\* The E+C transit system describes that combination of capital projects included in operator 5-years plans and beyond, which must be accomplished simply to:

- 1) Sustain existing levels of transit service indefinitely, and
- 2) Complete five-year improvement and expansion plans which have obtained the policy commitment of local and regional agencies, and are incorporated in the RTIP.

MTC reserves the option of refining this definition on a case-by-case basis.



TABLE S-1

Regional Transit Capital Resource Base

(\$ Millions, 1983)

	(RTIP) (1)	10-Yr. Total (1)	17-Yr. Total (2)
	1984-88	1984-93	1984-2000
	Lo / Hi	Lo / Hi	Lo / Hi
Total Capital Resources:	1,397/1,676	2,681/3,760	4,575/7,124
Less:			
E + C System Needs:	(1,041)	(1,695)	(2,872)
"New Start" Capital Resources:	345/635	986/2,065	1,703/4,252

(1) MTC projections

(2) Author's extrapolation using MTC methods

The Downtown Plan recommends implementing those projects listed in Table S-2. Total cost over and above E+C transit system needs: \$613 - 927 million.

TABLE S-2

(Over and above E+C System) Downtown Plan Transit Implementing Actions Recommended for Development

CAPITAL COST	
(\$ Millions 1983)	
Mandatory for Growth:	
o Five-Year Plan Projects	(E+C System)
o Additions by Corridor:	
- Transbay (BART/AC)	(E+C System)
- San Francisco (Muni)	
Additional Vehicles	\$115 M
J Line Extension	17 M
- Northbay (Golden Gate)	
Additional Vehicles	63 M
Mandatory funds needed over E+C System:	<u>\$195 M</u>

Recommended for Maximum Ridership, Efficiency, Productivity and Environmental Mitigation:

o Muni Metro Extension to 4th & Townsend	\$13 M
o BART to San Francisco Airport	340 - 654 M
o Improved/expanded Transbay Terminal	65 M
o Discount Muni Transfer Agreements (Superpass)	(M and O Expense)*
o Dispersed GG and SamTrans Bus Loading	(M and O Expense)
Recommended over E+C System:	<u>\$418 - 732 M</u>
TOTAL DOWNTOWN PLAN OVER E+C SYSTEM:	<u>\$613 - 927 M</u>

\* M and O = Maintenance and Operation

Based on available data, success in funding the Downtown Plan's transit recommendations presumes San Francisco can successfully compete against other Bay Area counties and cities for between 22 and 36 percent of projected regional discretionary transit capital resources over the 17-year time frame of the Downtown Plan.

This analysis strongly suggests that financial constraints do not, in themselves, pose an unreasonable barrier to achieving the specified transit objectives of the Downtown Plan. On the contrary, projections show the likely availability of substantial capital reserves, albeit at the regional level. What is needed to secure these funds for San Francisco (and the region) is a local consensus on transit objectives, and the identification of political and other community leadership able and willing to advocate specific project. Only in this manner will San Francisco and the Bay Area secure their fair share of available resources for public transit improvement.

#### CONCLUSIONS

- 1) The financial feasibility of implementing mandatory transit improvements needed to accommodate "appropriate levels" of commercial space growth in downtown San Francisco as defined in the Downtown Plan is virtually assured based upon MTC's adopted project priorities and transit resource projections;
- 2) Success in implementing short-range transit improvements incorporated in operator Five-year plans and in MTC's RTIP (1984-88) is key to guaranteeing adequate peak-period transit capacity for San Francisco over the longer term of the Downtown Plan;
- 3) Failure to vigorously pursue non-mandatory yet cost-effective transit improvements recommended by the Downtown Plan (e.g. BART to San Francisco Airport) is tantamount to sacrificing San Francisco's "fair share" of regional transit resources to other counties and



cities in the Bay Area and elsewhere in the state and nation;

- 4) The transit initiatives recommended in the Downtown Plan will have to successfully compete for between 22 and 36 percent of all regional discretionary transit capital which MTC projects to be available between now and the turn of the century. Success will be determined by: first, the level of local (political) support; and second, a variety of cost-benefit criteria mandated by state and federal guidelines and executed locally by MTC in the form of alternatives analyses;
- 5) The driving force behind future transit investment in San Francisco is no longer growth; rather, it is improving transit's operating efficiency and labor productivity while mitigating community environmental impacts through large-scale shifts to public transit ridership. These factors have in fact become the primary criteria justifying future transit capital investment in San Francisco;
- 6) The active support of local political and other community leaders will be the key determining factor in San Francisco's long-term success at upgrading and expanding Muni and the various regional carriers serving the city.

## INTRODUCTION

### THE SAN FRANCISCO DOWNTOWN PLAN (November 1983 Draft)

The Downtown Plan for San Francisco, drafted by the Department of City Planning, encompasses a series of recommendations redirecting office space development in both form and location within the C-3 use districts of San Francisco. An "appropriate growth" in office space by the year 2000 of 22 million square-feet adding to the existing 55 million square-feet inventory, has been defined in the plan.

The plan goes on to stipulate recommendations in two related public policy areas -- housing and transportation. The implementation of these recommendations is required "...if the rate of (office space) growth projected for the city (is to) continue without adverse consequences." In the absence of these secondary actions, the plan suggests that "...the growth rate (of downtown office space) may need to be slowed as a matter of deliberate public policy."

If the rationale underlying the Downtown Plan's "appropriate growth" rates for commercial office space development is accepted, it becomes essential to establish the feasibility of implementing the housing and transportation recommendations as interdependent elements of that plan in order for it to be whole.

The purpose of this analysis is to examine the feasibility of the plan's transportation recommendations -- in particular, the long-term financial feasibility, given existing and anticipated resource constraints, and the expanding peak period public transit capacity to, from and within downtown San Francisco specified in the Downtown Plan (pp. 117-122).

### PROJECTED TRANSPORTATION SYSTEM DEMAND

The plan projects an increase in downtown employment totalling 100,000 persons as the primary consequence of 22 million square-feet of additional

office space. In fact, this is a high estimate based on the Department of City Planning's own September 1983 guidelines for environmental review (Attachment A-1), which suggest a total increase of just under 80,000 persons. Further, the plan estimates that 70,000 of the additional downtown workers will travel to and from their jobs during peak commute periods (7-9 a.m./4-6 p.m.) when transportation system maximum capacity is reached. Again, the Department's own guidelines (Attachment A-2) suggest a slightly lower number: 66,000.

The plan's peak-period transportation demand component is conservative in another, less quantifiable way: it does not account for the continued "spreading" of the peak. This is a well-established trend wherein continually higher proportions of the work force travel to and from their jobs during times other than the traditional peak periods. So-called "flex-time" programs exemplify this trend.

Of greater potential impact over the long-term, however, is the changing nature of whole industries wherein machine interface (e.g. computers) becomes the determinant for when and where a person conducts work activities. San Francisco and the Bay Area are obviously in the forefront of this trend. Looking to the year 2000, it is impossible to quantitatively predict the effects this will have on commuting. It should nevertheless be considered in light of the status-quo assumptions underlying the plan's calculation of future transportation demand given a predetermined growth in office space.

The 70,000 additional peak-period commuters projected for downtown San Francisco may therefore be considered a very generous maximum to be absorbed by expanding transportation system capacity in conjunction with the 22 million square-feet in office space growth.



Accepting this maximum as the basic transportation system design criterion, the plan goes on to identify a two-pronged effort (p.177) to accommodate increased peak demand:

Effort 1: Increase ride-sharing (e.g. carpooling) by raising average vehicle occupancy rates from 1.4 to 1.6 persons per vehicle.

Effort 2: Increase public transit use by raising the average ridership from 55 to 62 percent of all commute trips.

#### RESULTING PEAK-PERIOD, PEAK DIRECTION CAPACITY INCREASES

Ride-sharing.....12,000 person trips

Public Transit.....58,000 person trips

TOTAL: 70,000 person trips

#### RECOMMENDED TRANSIT IMPLEMENTING ACTIONS

The Downtown Plan recommends the following list of public transit implementing actions (pp.118-122).

##### For construction/acquisition completion:

- o BART to San Francisco Airport
- o Muni Metro turnaround at Embarcadero
- o Muni Metro extension to Fourth & Townsend
- o Carry out current five-year plans (1984-88) for all transit operators serving San Francisco
- o Obtain discount Muni transfer agreements with all suburban carriers serving San Francisco
- o Improve and expand the Transbay Terminal
- o Disperse Golden Gate Transit and SamTrans curbside loading in downtown San Francisco

##### For alternatives analysis/feasibility study ONLY:

- o Muni Metro service to Geary/Third Street corridors
- o (Undefined) light rail service to Marin County via the Golden Gate Bridge
- o Extension of Southern Pacific/CalTrain rail service to a downtown San Francisco terminal

o Additional public/private ferry service to downtown San Francisco

Implicit throughout the first group of projects -- those actually to be built or acquired during the planning period -- are two levels of priority (p.177):

- 1) Projects which are necessary in order to accommodate corridor-by-corridor increases in peak demand due to growth;
- 2) Projects which are desirable in order to maximize transit ridership, efficiency, productivity and environmental compatibility, but not mandatory to accommodate growth in itself.

Within the first priority category, the plan states that only two corridors require capacity expansion beyond that which will be achieved by implementing current five-year transit plans for capacity expansion through June 1988:

- o Eastbay (transbay) corridor: an additional 12-percent overall capacity increase in BART and AC Transit service will be needed
- o Intra-San Francisco: an added 8-percent overall capacity increase in Muni service will be necessary

Table 17 (p.115) illustrates transit system data supporting this conclusion -- presuming today's commute patterns for intra-San Francisco and corridor trips. Attachment B, excerpted from the City's updated environmental guidelines, also supports this conclusion. Further, these summary data are consistent with information developed in the San Francisco Strategic Plan, sponsored by the Chamber of Commerce. Analysis by Arthur Andersen & Co. illustrated on p.12 of the Strategic Plan's Executive Summary, projects a small overall surplus of transit capacity relative to demand by the year 2000 given the implementation of current transit five-year plans.

The Downtown Plan thereby implicitly delineates not two, but three classifications of transit implementing actions based on their relative priority. They are labeled here, in descending order, as categories IA, IB and II.

Category IA (Completion mandatory)

Only these, the first and highest priority category of projects, MUST be accomplished according to the plan, in order to accommodate increased peak-period transit trips associated with planned downtown growth:

- o Five-year plan transit capacity expansion projects \*(1984-88)
- o BART/AC transbay capacity expansion of 12 percent over five-year plan levels
- o Muni capacity expansion of 8 percent over five-year plan levels

Category IB (Optional but completion recommended)

City policies, consistent with the transportation element of its Master Plan, advocate the completion of these priority projects in order to maximize transit ridership, reduce transit operating costs per passenger, improve transit labor productivity and mitigate environmental impacts from transit systems generally (e.g. grade-separated rail transit in lieu of bus transit on city streets):

- o Muni Metro extension to 4th and Townsend
- o BART to San Francisco Airport
- o Discount Muni transfer agreements with suburban carriers
- o Improved and expanded Transbay Transit Terminal
- o Dispersed Golden Gate Transit and SamTrans curbside loading in downtown

\* Included in this group of projects is one of the plan's specified implementing actions: the Muni Metro Turnaround at the Embarcadero.

Category II (Alternatives/feasibility analyses, completion optional)

City policies and the Master Plan's transportation element advocate the eventual implementation of these projects or some alternatives providing equivalent levels of service. However, they are of lower overall priority, and/or lack adequate planning evaluation to date:

- o Muni Metro service to Geary/Third Street corridors



- o (Undefined) light rail service to Marin County via the Golden Gate Bridge
- o Extension of Southern Pacific/CalTrain rail service to a downtown terminal
- o Additional public/private ferry service to downtown

This series of projects may now be evaluated, given their relative priority ranking and their costs, compared with existing and anticipated public transit resources, in order to define an overall financial plan and corresponding feasibility for implementation.

#### BACKGROUND

#### THE PLANNING PROCESS

The public transit planning (and financing) process, in the Bay Area as in other major metropolitan areas of the country, is conducted at a regional level -- that is to say, from the perspective of all cities and/or counties in a given metropolitan area as defined by federal guidelines. The City and County of San Francisco is one of nine-counties and nearly 100 cities in the Bay Area region. San Francisco's own public transit needs are therefore weighed against the needs of a diverse and growing list of other communities throughout its region.

The Metropolitan Transportation Commission (MTC) is the public agency responsible for carrying out this comprehensive planning in the Bay Area. A brief historical review is in order to explain how such extraordinary authority came to be vested in MTC.

Created under statute in 1971, MTC succeeded a string of predecessors whose objective it was to recommend a plan for integrating the transportation network in an area renowned for its geographic, political and social diversity. This continues to be MTC's goal, but it is being pursued in a much more pragmatic fashion today: control of the purse strings for most transportation programs.

In 1972, MTC acquired teeth in its new role as the Regional Transportation Planning Agency (RTPA) with the passage of SB325, known as the Transportation Development Act or TDA. TDA provided all - new funding throughout the state for transit financing (as well as for highway financing where no "unmet" transit needs could be identified). It did this by extending the state sales tax to include gasoline, simultaneously returning a portion of the total sales tax (.25 percent) back to the counties in the form of a "local transportation fund." MTC was designated as the agency to receive and allocate these funds within the nine-county Bay Area.

By the mid 1970s, the federal government, through its Department of Transportation - Urban Mass Transportation Administration (USDOT-UMTA), had become the single major source of funding for transit capital investment. In return for this largesse, however, USDOT-UMTA required that comprehensive, area-wide transit planning processes be initiated in addition to local, operator-by-operator planning activities. This process was intended to avoid duplication of effort and assist USDOT-UMTA in making funding decisions among competing projects within and between metropolitan areas. Not a bad thing in itself, but in the course of accomplishing this objective, a sacrifice in local autonomy and decision-making authority occurred.

MTC was designated from the outset as the metropolitan planning organization responsible for carrying out this comprehensive planning process in the Bay Area.

More recent state-enacted legislation has followed USDOT-UMTA's lead in designating MTC as this region's recipient for most transit funding resources, again predicated on an ongoing regional planning process. Over time, the state has authorized the creation of RTPA's in other metropolitan areas patterned after MTC, and has even created a statewide equivalent to coordinator all state and regional transportation planning activities in California: the California Transportation Commission (CTC).

MTC is clearly in the driver's seat where future public transit funding is concerned. Any transit development initiative in San Francisco's Downtown Plan must therefore compete successfully within MTC's planning process if it is to be implemented using the vast majority of resources available to Bay Area transit. (See Attachment C for a discussion of transit funding resources available to Bay Area transit operators.)

MTC's planning process culminates in a specific plan for transit improvement, which is updated annually: the Regional Transportation Improvement Program for the Nine-County San Francisco Bay Area, or RTIP. The RTIP is the vehicle through which nearly all resources are channeled for transit improvement.

A key premise incorporated in the Downtown Plan is that transit capital projects included in MTC's current RTIP (1984-88) -- itself an agglomeration of transit operator five-year plans -- will be implemented. These projects will provide all necessary additional peak-period capacity to accommodate the plan's "appropriate growth" in downtown San Francisco, with the exception of the two corridors (Eastbay and San Francisco) for which improvements can be separately evaluated beyond the RTIP's five-year time frame. "New Start" projects within the RTIP -- major additions to the region's rail transit system -- are not presumed to be implemented, with the exception of four projects redefined by MTC as part of the "basic system" (see page 10 list) during hearings held in February 1984.

#### THE EXISTING + COMMITTED (E+C) TRANSIT SYSTEM

The transit capital improvement element of the RTIP exceeds \$2.1 billion. (See Attachment D for a summary of transit capital improvements programmed in the current RTIP). This total incorporates the five-year capital improvement plans of individual Bay Area transit operators competing for federal, state and regional resources channeled through MTC. As such, it



represents a "wish list" of projects, with the exception of the first year or "annual element." Projects included in the annual element must have a firm basis in anticipated regional funding, as determined by MTC. The remainder of the RTIP serves as a funnel to the annual element, which is updated each year to incorporate those additional projects with local consensus, completed engineering and design work and for which funding has been identified.

In order to help MTC's regional planners distinguish those projects in the list which operators most want, a priority ranking is forwarded to MTC for each project or group of projects in each operator's respective five-year plan. The most basic element of this priority ranking are those capital improvement projects associated with the so-called "Existing + Committed (E+C) System."

The E+C System describes that combination of capital projects included in the RTIP and operator five-year plans which must be accomplished simply to:

- 1) Sustain existing levels of transit service indefinitely; and
- 2) Complete service improvement and/or expansion plans which have obtained the policy commitment of local operator boards of directors, and of the MTC

MTC retains the discretion to refine this definition on a case-by-case basis.

E+C System capital costs may be quantified in the RTIP based on MTC's criteria in order to determine the level of resources necessary to meet top-priority transit capital requirements over the five-year period. MTC's calculation of E+C System needs incorporated into the current (1984-88) RTIP totals \$1.0 billion of the total \$2.1 billion capital program. (See Attachment E)

Included in this \$1 billion, five-year program are the transit capacity expansion projects which the Downtown Plan presumes will in fact be implemented, accommodating growth in San Francisco's peak-period demand through the year 2000 in all but the two corridors previously mentioned:

FIVE-YEAR PLAN (RTIP) E+C SYSTEM IMPROVEMENTS

Muni

- o Muni Turnaround and break-out at the Embarcadero (Re-defined "New Start" project)
- o Bus and Trolley rehabilitation and replacement program
- o Rail and non-rail support facilities

Bart

- o Daly City tail track and storage yard (Re-defined "New Start" project)
- o 150 rapid transit cars
- o Train control/computer upgrading
- o Fire-Hardening safety improvements
- o Third Oakland subway

CalTrain

- o 18 new locomotives and 63 passenger cars (Re-defined "New Start" project)
- o Upgrade Peninsula stations and parking facilities

AC Transit

- o Conversion of transbay vehicles from standard to articulated with support facilities

Golden Gate, SamTrans, and Santa Clara transit

- o Expanded operating fleets with support facilities
- o Guadalupe Corridor light rail line (Re-defined "New Start" project)

MTC has also projected E+C System needs to the year 1993, using long-range regional evaluations developed by Peat, Marwick, Mitchell & Co. consultants in a December 1980 study entitled "Analysis of the Capital Requirements of the San Francisco Bay Area Transit Systems" (1981-1995). These are estimates of the continuing expense of sustaining, in a contemporary mode, service levels of the E+C System which the Downtown Plan presumes by the end of the current five-year period.

#### CAPITAL RESOURCE BASE

Arrayed against a projection of anticipated revenues available for transit capital program, E+C System needs have been evaluated by MTC from a financial feasibility perspective for the ten-year period (1984-1993). MTC projections in Table 1 indicate that E+C System needs are fully fundable using this analytic approach, with an excess capital improvement reserve for the region estimated at between \$986 and \$2,065 million.

Using similar long-range projection assumptions, E+C System needs for the remaining seven years (to the year 2000) can be estimated, relative to resource availability. The resulting seventeen-year totals in Table 2 show net capital improvement resources over and above E+C System needs of from \$1,703 to \$4,252 million available to the Bay Area region through the year 2000.



TABLE 1  
Capital Fund Estimate  
(\$ millions 1983)

Line	REASONABLY ASSURED FUNDS	1983/84	1984/85	1985/86	1986/87	1987/88	Total 5-Year	Total 1988-1993	Total 10-Year
1	STA (70%)(3)	13.4	14.5	14.5	14.5	14.5	71.4	71.4	142.8
2	Bridge Tolls	9.8	10.2	10.6	11.0	11.4	53.0	64.5	117.5
	Sales Tax								
3	- Santa Clara Co.(4)	7.6	10.1	15.4	16.3	22.8	72.2	72.2	144.4
4	- San Mateo Co.(5)	7.4	5.7	4.6	4.3	4.2	26.2	26.2	52.4
5	- Other local(1)	2.4	?	?	?	?	?	?	?
6	Sub Total "Regional" Funds	40.6	40.5	45.1	46.1	52.9	225.2	234.3	459.5
7	Add: Sec. 5	3.4	---	---	---	---	3.4	---	3.4
8	Sec. 9	89.6	109.8	114.6	114.6	114.6	543.2	600.0	1,143.2
9	Sub Total Federal	93.0	109.8	114.6	114.6	114.6	546.6	600.0	1,146.6
10	Total Reasonably Assured Funds (Line 6 + Line 9)	133.6	150.3	159.7	160.7	167.5	771.8	834.3	1,606.1
	DISCRETIONARY FUNDS		Low High	L H	L H	L H	L H	L H	L H
11	Sec. 3	107.8	50.0 100.0	50.0 100.0	50.0 100.0	50.0 100.0	307.8 507.8	250.0 750.0	557.8 1,257.8
12	Guideways(3)	68.3	40.0 60.0	40.0 60.0	40.0 60.0	40.0 60.0	228.3 308.3	200.0 300.0	428.3 808.3
13	Sub Total Discret.	176.1	90.0 160.0	90.0 160.0	90.0 160.0	90.0 160.0	536.1 816.1	450.0 1,250.0	986.1 2,066.1
14	Interstate Transfer						88.8 88.8		88.8 88.8
15	Total Capital Funds (Line 10 + Line 13 + Line 14)	309.7	240.3 310.3	249.7 319.7	250.7 320.7	257.5 327.5	1,396.7 1,676.7	1,284.3 2,084.3	2,681.0 3,761.0
16	LESS: IMPROVEMENTS TO SUSTAIN EXISTING AND COMMITTED SYSTEM(2)	(278.2)	(247.2)	(253.6)	(142.6)	(119.5)	(1,041.1)	(654.0)	(1,695.1)
17	FUNDS AVAILABLE FOR NEW STARTS/EXPANSION (Line 15-Line 16)	31.5	63.1	66.1	178.1	208.0	355.6 635.6	630.3 1,430.3	985.9 2,065.9

NOTES

- (1) Other could include accumulated capital reserves, bonded debt, sale/leaseback income, joint development/benefit assessment district income, transit fare surcharge, additional bridge toll revenues, refinanced general obligation bonds, etc.
- (2) This is the entire 5 year Transit Capital Improvement Program with the exception of programmed new starts/extension projects for BART, S.F. Muni, Caltrans, and Santa Clara Co. Transit District.
- (3) Latest CTC estimate indicates that an expanded program would be required to generate assumed high funding projection.
- (4) Based on cost reduction plan. Assumes no drawdown of reserves estimated at \$70.6 million beginning 1984/85.
- (5) Based on actual sales tax revenues generated in 1982/83 and projections by SamTrans.

TABLE 2

Summary Capital Fund Estimate for Bay Area Transit (1984-2000)

(\$ million 1983)

	(1) 1984-1988 (TIP)		(1) 1988-1993		TOTAL (MTC) 10 YEARS		(2) 1993-2000		TOTAL 17-YEARS FORECAST	
	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
Total Capital Funds:	1,397	1,676	1,284	2,084	2,681	3,760	1,874	3,364	4,575	7,124
Less:										
E+C System Needs:	(1,041)		(654)		(1,695)		(1,177)		(2,842)	

---

	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
Funds Available for New Starts/Transit Expansion:	356	635	630	1,430	986	2,065	697	2,187	1,733	4,282

---

\* NOTE \*

(1) MTC estimates, October 1983 (See Table 1)

(2) Author's projection using MTC methodology

---

DOWNTOWN PLAN IMPLEMENTING ACTION COSTS

Table 2 illustrates a "best-guess" projection of net regional transit capital resources available for transit investment over and above E+C System needs. The E+C System, when implemented, will accommodate the bulk of San Francisco's peak-period transit demand as projected through the year 2000 -- assuming the Downtown Plan's growth projections for the interim period. Still to be ascertained is the feasibility of implementing additional transit initiatives as identified by the plan, based on their relative priority.

Category IA - (Mandatory completion)

- o Five-year plan projects (1984-88)

All of these projects, including the Muni Metro turnaround (as a redefined "New Start" project), are included in the E+C System -- and their funding has already been deducted from the resource base.

- o BART/AC Transit transbay capacity expansion totalling 12 percent over five-year plan levels

BART's five-year plan (1984-88) incorporates a series of capacity expansion objectives associated with its systemwide capital improvement program \*(see attachment F). Transbay peak hour, peak direction capacity expansion up to July 1988 -- that presumed by the Downtown Plan -- is 50 percent more than existing levels (from 16 to 24 transbay trains in the peak hour). Soon after that date, BART anticipates its ability to further increase transbay peak hour service by an additional 8 percent (from 24 to 26 trains) by relying on the capital investment included in its five-year plan -- which in turn is part of the E+C System. This should absorb the bulk of corridor expansion needs identified by the Downtown Plan.

---

\* The principal elements of BART's five-year capital program (also a part of the E+C System) are:

- o 150 additional rapid transit cars
- o new central, wayside and onboard computer train controls
- o fire hardening safety improvements
- o third subway track in Downtown Oakland
- o Daly City tail and storage facility for 150 cars (redefined "New Start")



AC Transit has no plans for increasing the numbers of vehicles on its transbay routes during the five-year RTIP or beyond. However, N.A. Gage, AC Transit's Assistant General Manager for Finance, indicates that AC's fleet replacement plans, using articulated buses which are a part of their five-year plan, will in themselves permit a peak-period, peak direction transbay capacity increase of 3,000 trips.

Taken in conjunction with BART's post-RTIP peak service expansion of roughly 4,000 trips, the 12 percent corridor capacity deficit is effectively absorbed without requiring further capital expenditure beyond that accommodated within the five-year RTIP E+C System.

- o Intra-San Francisco/Muni capacity expansion totalling 8 percent over five-year plan levels.

The bulk of San Francisco's need for peak transit capacity expansion, as implied by the Downtown Plan, is incorporated in five-year plan projects. The majority of these are in the E+C System. Significantly, this includes \$47.5 million (1983 dollars) for Muni Metro's turnaround and break-out at the Embarcadero, which will increase existing Metro system capacity by approximately 70 percent through reduced headways and increased reliability. As with AC Transit, Muni's five-year plan anticipates conversion of the more heavily patronized radial lines from standard size to articulated equipment -- totalling 286 new articulated diesel coaches and 109 new articulated trolleys. A variety of other transit facility (both rail and non-rail) investments, as well as transportation system management (TSM) initiatives, are also incorporated in Muni's five-year plan (e.g. bus lanes, signal preemption). TSM measures are intended to favor transit in mixed traffic and thereby increase service productivity.

The additional 8 percent in system capacity identified by the Downtown Plan as necessary for growth could be met, according to an analysis reported in the Downtown EIR Study (December 1982), by a net addition of 184 transit

vehicles to Muni's fleet, along with expanded support facilities. Cost: \$106 million in 1982 dollars. (Adding 8 percent for 1983 costs, a total capital expenditure of \$115 million would be necessary between 1988 and 2000 for essential Muni expansion.) Total cost: \$115 million

One additional Muni project should also be included in this category: J-Line Muni Metro extension to Metro Center. While this is not technically mandated for capacity requirements, operational considerations strongly suggest it will soon become a part of the E+C System. Total cost: \$17 million.

o Golden Gate northbay capacity expansion (supplemental)

The Golden Gate Corridor demonstrates potential transit demand that will require additional bus service improvement within the time frame of the Downtown Plan. Karen Wallsten, associate planner with the Golden Gate Bridge, Highway and Transportation District (GGBHTD), suggests that realistic demand considerations support expanding bus transit service beyond E+C System levels. GGBHTD's corridor demand projections are consistently higher than the Downtown Plan's projections, which consider only trips associated with downtown. GGBHTD projects approximately 10,000 more peak-hour trips by the year 2000. Most of these added trips must be accommodated in transit since the bridge will have reached its capacity.

Wallsten confirms the Downtown Plan's estimate of excess capacity in GGBHTD's ferry division, which could absorb part of this additional demand. Current travel patterns, however, suggest the ferries would only be more heavily patronized as a last resort, due mainly to this mode's extra time and transfer requirements.

Assuming half of the ferry's excess capacity is used by GGBHTD's higher demand forecast, some 5,000 additional peak period trips must still be accommodated on buses: 100 additional buses would thereby be required, along with the necessary support facilities. Using the same fully distributed cost for

GGBHTD as used for Muni, an additional \$63 million in transit capital investment is required for the Golden Gate corridor. Total Cost: \$63 million.

A related, though less likely, corridor investment pertains to a second deck on the Golden Gate Bridge itself. Last officially studied in 1967, the issue of a second deck has arisen most recently in conjunction with improving traffic safety rather than expanding capacity. A second deck, while accommodating transit preferential and carpool lanes, would not alter more permanent corridor traffic constraints on the bridge approach roads in San Francisco -- notably Doyle Drive. Nevertheless, incorporating the cost of a second deck with additional transit buses for discussion purposes only establishes a reasonable upper limit for Golden Gate Corridor non-rail transit expenditures. Wallsten quotes a \$200 million order-of-magnitude price for the second deck and modified approaches.

NET ADDITIONAL CAPITAL INVESTMENT OVER AND ABOVE E+C SYSTEM FOR CATEGORY IA:

Total Cost: \$195 million.

Category IB - (Optional, but Completion Recommended)

- o Muni Metro Extension to 4th & Townsend (See Muni five-year Plan)

This project entails a surface extension of metro tracks from the subway turnaround and portal at the Embarcadero, south along the waterfront and west to the CalTrain Terminal at Fourth and Townsend. A cross platform facility connecting Metro and CalTrain is included.

The Metro extension is one of several transit projects being evaluated as part of the I-280 Transfer Concept Program

- o BART to San Francisco Airport

A BART extension from Daly City to the vicinity of San Francisco Airport is a long-standing priority in the transportation element of San Francisco's Master Plan. While it is not essential to accommodate the Downtown Plan's "appropriate growth" in office space, it would nevertheless expand the BART



system in a manner particularly beneficial to San Francisco (one of three BART member counties):

- (1) Transit ridership would increase by 40-60,000 trips per day from the Peninsula, with associated decreases in auto commute traffic;
- (2) Projected excess BART capacity from Daly City would be filled, reducing the operating subsidy otherwise required;
- (3) A new underground terminal and subway for SP/CalTrain in downtown San Francisco would be rendered unnecessary, given the inclusion of a cross-platform transfer capability to BART in the vicinity of the airport.

The San Francisco Airport Access Project (SFAAP), completed in 1972 by Parsons Brinkerhoff, Quade and Douglas consultants, remains the most authoritative evaluation of a BART extension to the airport. Based on that report, updated capital costs were developed by William Lathrop, project manager for Parsons Brinkerhoff, in conjunction with MTC's "New Starts" hearings.

Lathrop presented his updated cost estimates to MTC as follows:

BART EXTENSION: DALY CITY TO SAN FRANCISCO AIRPORT WITH YARD (1983 dollars)

	<u>w/No. SMC Sta's.</u>	<u>w/out No. SMC Sta's.</u>
Airport Direct Line (1).....	\$814 million	\$654 million/MTC range
Airport Indirect Line (2).....	\$662 million	\$502 million
Indirect Line to San Bruno (3).....	\$N/A	\$340 million/MTC range

---

NOTES

- (1) Subway station built beneath the central airport garage
- (2) Remote surface station at west end of airport property; includes the costs of a "light-guideway transit" connector running between the station and airport terminals
- (3) BART estimate for mainline extension to the vicinity of San Bruno. A cross-platform transfer facility with Caltrain would be possible as an add-on expense. Shuttle buses would provide the final link to SFO.

The E+C System includes funding BART tail tracks south from Daly City to the vicinity of the next southerly station site in Colma (as a redefined "New Start" project). This would reduce the net cost for the BART extension, according to Richard Wenzel of BART's planning staff, by \$95 million. Therefore, BART airport extension costs over and above the E+C System should be reduced by \$95 million.

	<u>w/No. SMC Sta's.</u>	<u>w/out No SMC Sta's.</u>
BART Airport Direct.....	\$719 million	\$559 million
BART Airport Indirect.....	\$567 million	\$407 million

However, the full costs have been incorporated consistent with MTC planning information. (See Attachment G for additional project information.)

Given the five-year (and E+C System) expansion plans by SamTrans, SP/CalTrain and BART, the Downtown Plan projects a large surplus transit capacity for the Peninsula. (Table 17, p.115). Taken in the context of the region's single busiest travel corridor, this surplus would indicate that existing Peninsula transit services are not properly designed to address the needs of this transportation market.

Only with a full rapid rail transit extension in northwestern San Mateo County, in fact, are substantial numbers of increased transit trips (and reduced auto trips) generated in this corridor. Additional bus service, therefore does not appear to be appropriate, since commuters will simply continue to drive. Total cost: \$340-654 million.

- o Discount Muni transfer agreements with suburban carriers

The most recent estimate cited in BART's five-year plan is for a BART/AC/Muni "superpass" to be in effect by January 1985. There are already limited transfer agreements between Muni and most regional carriers. The ultimate realization of a truly regional transit pass with San Francisco and Muni at its focus entails only minimal capital investment. Total cost: N/A.

o Improved/expanded Transbay Terminal

The state, owner and operator of the Transbay Terminal, has adopted a minimum \$25 million upgrading program for this facility. Studied under the auspices of a San Francisco Bay Area Transbay Terminal Authority (S.F. BATTA), a preferred alternative for improvements and expansion was identified in the 1981 S.F. BATTA Final Report, with capital costs totalling \$56 million, or \$63 million in 1983 dollars. Total cost: \$63 million.

A significant opportunity exists for joint development of the Transbay Terminal with private developers. It is possible, given the inherent value of air rights on the site, that costs of a new terminal incorporated with commercial development could be fully defrayed using lease revenues. Reduced height restrictions proposed by the Downtown Plan for the terminal site, however, severely restrict this potential funding opportunity.

o Dispersed Golden Gate Transit and SamTrans curbside loading in downtown

These modifications require only minimal capital expenditure by the two transit operators involved. Total cost: N/A

NET ADDITIONAL CAPITAL INVESTMENT OVER AND ABOVE E+C SYSTEM FOR CATEGORY IB:

\$418-732 million.

Category II - (Alternatives/feasibility analyses, completion optional)

The capital cost for conducting preliminary analyses, as called for in the Downtown Plan, in themselves represent relatively minor expenditures. For the purpose of discussion, therefore, approximate capital costs may also



be assigned to this group of projects so that a relationship to the projected regional transit capital resource base can be considered.

o Muni Metro service to Geary/Third Street Corridors

A "Bayshore Corridor Study" has recently been launched by Muni and the S.F. Public Utilities Commission (PUC) to evaluate the potential for rail service in the Third Street corridor. The "Northwest San Francisco Rapid Transit Extension Study" was completed in the mid-1970's under the sponsorship of BART, and evaluated the potential for a variety of rail transit service alternatives in the Geary Street corridor.

September 1983 capital cost estimates for the projects supplied to MTC by Muni/PUC describe the following gross cost range based on minimum vs. maximum grade separation rail transit alignments:

Muni Metro - 3rd Street: \$100-200 million

Muni Metro - Geary Street: \$50-800 million

Total cost: \$150-1,000 million

o (Undefined) light-rail service to Marin County

Two rail projects are being evaluated for Marin County at this time: a light-rail line extending north from GGBHTD's Larkspur Ferry Terminal to Novato, using abandoned rail right-of-way formerly owned by the Northwestern Pacific Railroad (MTC is sponsoring this study);

A heavy-or- light-rail line either across the Golden Gate Bridge or underwater, roughly paralleling US101 north to an undefined northern terminus. (The Marin County Planning Department is conducting this evaluation as part of a US101 Corridor Study.)

The concept of rail transit service across the Golden Gate Bridge was carefully evaluated in the late 1950s in conjunction with the five-county BART plan. Subsequent engineering studies determined the bridge itself to be structurally incapable of supporting the added weight of rapid transit trains --

a finding which proved instrumental in causing Marin County to drop out of the BART District prior to the 1962 bond referendum.

"Modern" rail equipment and structures, while being of similar basic design to earlier rapid transit systems, pose less stringent load dynamics and therefore can be considered.

Neither MTC nor GGBHTD nor Marin County have developed any specific plans for rail service across or under the bridge. Notwithstanding the Down-town Plan's recommendation to study its feasibility, a more realistic alternative within the time frame concerned is a second bridge deck for vehicular traffic, including buses, which incorporate transit and carpool/vanpool preferential lanes in the peak direction. For discussion purposes, however, a bench mark cost of \$700 million can be assumed based on prevailing light rail construction costs for service across the Golden Gate Bridge as far north as Novato. This presumes separate construction of a second bridge deck, for another \$200 million as previously mentioned.

Total cost: \$900 million +.

- o Extension of Southern Pacific/CalTrain rail service to a downtown terminal

Caltrans has recently updated its capital cost estimate for extending SP/CalTrain service from the present terminal at Fourth & Townsend to a new underground terminal adjacent to the Transbay Terminal in downtown San Francisco, via subway. CalTrans' estimated capital cost is \$341 million.

The rationale for undertaking this project is directly tied to the decision of whether to extend BART to San Francisco Airport. If BART is extended and interconnects with SP/CalTrain in the vicinity of the airport, a new underground terminal in downtown San Francisco for CalTrain would only duplicate BART's six existing Market and Mission Street stations, and with considerably poorer distribution. While this would require a transfer for Peninsula riders wishing to use BART, peak-period CalTrain service could

continue to serve the Fourth & Townsend terminal for those riders desiring direct service. The Muni Metro extension to this site will provide direct, high capacity service into Downtown. Patronage estimates for this combined BART/CalTrain system are also much higher than estimates for CalTrain with a downtown terminal alone. (Patronage estimates found in the I-280 Transfer Concept Program DEIR show less than 15,000 additional daily transit trips on SP/CalTrain due to a new downtown terminal; separate estimates for BART to the airport range between 40,000 and 70,000 additional daily transit trips).

However, if the very substantial political roadblocks to extending BART into San Mateo County cannot be overcome, the SP/CalTrain terminal may be chosen by default.

o Additional public or private ferry service to downtown

Total cost: \$341 million.

GGBHTD's experience with commute ferry service does not encourage further expansions of this mode. The primary problem according to Golden Gate, is the trip's time length. Various feasibility studies have been conducted and even trial service operated between San Francisco and other points around the bay. To date, no viable expansion of this commute mode has been identified which is competitive with more traditional forms of transit. Nevertheless, individual opportunities for serving certain bayside communities may exist and should be considered.

Total cost: Unknown

NET ADDITIONAL CAPITAL INVESTMENT OVER AND ABOVE E+C SYSTEMS FOR CATEGORY II:

\$1,050-2,241 million.

Table 3 summarizes the costs of all three categories of transit implementing actions recommended by the Downtown Plan.

TABLE 3

Capital Cost Estimate for the  
Downtown Plan's Transit Implementing Actions (1984-2000)  
(\$ millions 1983)

	Priority Level Totals	Cumulative Totals
Category IA ..... \$195 (Mandatory to implement)		\$195
Category IB ..... \$418-732 (Optional and recommended to implement)		613 - 927 (1)
Category II..... \$1,050- (Study; optional to implement) 2,241		\$1,322 - 2,827 BART SFO (2)
		\$1,323 - 2,514 SP TERMINAL (3)

---

\* NOTES

- 1) Downtown Plan's recommended level of funding
- 2) Deduct \$341M in Category II costs for SP downtown terminal
- 3) Deduct \$340-654M in Category IB costs for lo/hi BART to SFO



# FINANCIAL FEASIBILITY OF TRANSIT IMPLENTING ACTIONS

Table 4 relates cumulative capital cost estimates for each category with the regional transit capital fund estimate, thus providing an analytical basis from which to evaluate the Downtown Plan's financial feasibility for public transit improvement.

TABLE 4

The Downtown Plan's  
Transit Capital Costs Relative to Regional Resources  
(1984-2000)

	IA	IB	II
Cumulative Downtown Plan Expenditures (\$ millions)	\$195	\$613-927 (1)	\$1,322-2,827 - BART SFO \$1,323-2,514 - SP TMNL.
Regional Transit Capital Resources (\$ millions) Net of E+C System Needs (See Table 2)	\$1,703 - 4252		
% of Regional Resources Required (2)	5-12%	22-36% (1)	66-78%

## NOTES

(1) Downtown Plan's recommended level of expenditure

(2) Low end of cost range is set against low resource estimate; High end costs are set against high resource estimate. This presumes projects will not be undertaken without adequate assurance of federal and state funding -- consistent with contemporary practice.

## CONCLUSIONS

Presuming a logical extrapolation of existing transit capital funding programs as undertaken recently by MTC, the Bay Area appears to be in an excellent fiscal position to further expand and improve its public transportation infrastructure. Projections point to a substantial capital reserve for this purpose, albeit at the regional level. What remains to secure these funds for San Francisco is the development of a local consensus and the identification of political and other community leadership able and willing to advocate specific project initiatives. Only in this manner can San Francisco win its fair share of resources at the regional, state and national levels for public transit improvement.

The following conclusions can be drawn from this evaluation:

- 1) The financial feasibility of implementing mandatory transit improvement needed to accommodate "appropriate levels" of commercial space growth in downtown San Francisco as defined in the Downtown Plan is virtually assured based upon MTC's adopted project priorities and transit resource projections;
- 2) Success in implementing short-range transit improvement incorporated in operator Five-year plans and in MTC's RTIP (1984-88) is key to guaranteeing adequate peak-period transit capacity for San Francisco over the longer term of the Downtown Plan;
- 3) Failure to vigorously pursue non-mandatory yet cost-effective transit improvements recommended by the Downtown Plan (e.g. BART to San Francisco Airport) is tantamount to sacrificing San Francisco's "fair share" of regional transit resources to other counties and cities in the Bay Area and elsewhere in the state and nation;
- 4) The transit initiatives recommended in the Downtown Plan will have to successfully compete for between 22 and 36 percent of all regional discretionary transit capital which MTC projects to be available

between now and the turn of the century. Success will be determined by: first, the level of local (political) support; and second, a variety of cost-benefit criteria mandated by state and federal guidelines and executed locally by MTC in the form of alternatives analyses;

5) The driving force behind future transit investment in San Francisco is no longer growth; rather, it is improving transit's operating efficiency and labor productivity while mitigating community environmental impacts through large-scale shifts to public transit ridership. These factors have in fact become the primary criteria justifying future transit capital investment in San Francisco;

6) The active support of local political and other community leaders will be the key determining factor in San Francisco's long-term success at upgrading and expanding Muni and the various regional carriers serving the city.

#### ADDENDUM: MAINTENANCE AND OPERATIONS FINANCING

The entire subject of transit financing for maintenance and operations (M&O) has been avoided in this paper for several reasons.

First, the financial feasibility of public sector infrastructure improvements is traditionally (and properly) based upon the availability of capital resources with which to build and/or acquire. M&O budgets are developed annually, usually in a crisis atmosphere pitting riders against tax payers and transit operators against one another for allocation of available federal, state and regional resources. With MTC's recent entrance on the scene, this process in the Bay Area has been somewhat formalized. However, analytical extrapolation of M&O funding over a 17-year period is, for all intents and purposes, an exercise in futility.

Second, unlike many other major metropolitan areas of the country, the Bay Area has an ongoing, predictable and dedicated base of local and regional resources available strictly for transit M&O budgets. A one-half percent sales tax override in five counties, generating nearly \$200 million annually, provides the corner-stone of this fiscal stability. Local property/General Fund taxes and state (TDA) sales tax on gasoline comprise the other two major dedicated sources available in the region for M&O expenses. Each of these is directly inflation-responsive and, as a group, are able to match reasonable rates of increase in operating subsidy requirements over the long term.

Together with a conscious and realistic fare policy, along with active management and labor programs for improving transit service efficiency and productivity, Muni and the region's other operators have the capability to match M&O needs with the foreseeable resource base.

And third, many if not most of the transit capital initiatives recommended by the Downtown Plan are inherently more efficient and labor productive than the services they would replace or supplement. The conversion of a bus



line to rail service, or of standard coaches to articulated coaches have as a common theme increased ridership and operating revenues with a less than proportionate increase in labor and other support costs. In other words, capitalization of resources is the common objective in the public transit industry today, as in most other private and public industries. Capital improvements to transit of the type proposed in the Downtown Plan could in fact, lead to reduced M&O budget requirements, net of fares.

Finally, each transit capital improvement must, under regionally administered funding guidelines, be evaluated taking net operating costs into consideration. In this context, the issue of adequate M&O funding for recommended service improvements is most accurately addressed as a prerequisite to any individual capital project initiative receiving final approval.



ATTACHMENT A  
DCP ENVIRONMENT GUIDELINES  
FOR NEW COMMERCIAL DEVELOPMENT  
IN C3 ZONES: EXCERPT





RECOMMENDED TRIP GENERATION CHARACTERISTIC FOR ALL  
DOWN OFFICE BUILDINGS

Assumes:	One office worker per 275 gross square feet	
Assumes:	A-1 - 3.62 office workers per 1,000 gross square feet (as defined by the City Planning Code)	
Assumes:	Five daily person trip ends (P.T.E.) per office worker	
Assumes:	18.1 Daily P.T.E. per 1,000 gross square feet (as defined by the City Planning Code)	
Assumes:	AM Peak 15 Minutes	= .65 PTE/k sq. ft.
	AM Peak Hour	= 1.9 PTE
	AM Peak Period	= A-2 - 3.00 PTE
	Mid Day Peak 15 Min	= .77 PTE/k sq. ft.
	Mid Day Peak Hour	= 2.43 PTE
	Mid Day Peak Period	= 4.76 PTE
	PM Peak 15 Minutes	= .64 PTE/K sq. ft.
	PM Peak Hour	= 1.90 PTE
	PM Peak Period	= A-2 - 3.00 PTE

Percent of Daily Travel

AM Peak	Fifteen Minutes (8:30-8:45)	3.5%
AM Peak	Hour (8-9)	10.4
AM Peak	Period (7-9)	16.5
Mid-Day Peak	Fifteen Minutes (12:50-1:05)	4.3%
Mid-Day Peak	Hour (12-1)	13.4
Mid-Day Peak	Period (11:30-1:30)	26.3
PM Peak	Fifteen Minutes (4:35-4:50)	3.5%
PM Peak	Hour (4:14-5:15)	10.4
PM Peak	Period (4-6)	16.5

Sources: C-3 Employer Survey, Ferry Building Complex Parking & Pedestrian Analysis, Intra-CBD Secondary Travel Patterns

Visitor and Other Business Travel to Office Buildings in Downtown San Francisco: Origin and Modal Split Rates

P.M. Peak Hour Person Trips: 10%

A component of total trip generation for office uses. Assumes 2.5 visitor person trips per 1,000 gross square feet as defined by the City Planning Code.



ATTACHMENT B

DCP ENVIRONMENTAL GUIDELINES

FOR NEW COMMERCIAL DEVELOPMENT

IN C3 ZONES: EXCERPTS





ALL C-3 PRIMARY OFFICE WORKERS:\* AREA OF RESIDENCE  
BY MODE (JOURNEY TO WORK)

Northeastern San Francisco	7%	12% Drive alone 1 Carpool 25 MUNI 1 BART 58 Walk 2 Taxi
Northwestern San Francisco	18%	6% Drive alone 7 Carpool 85 MUNI
Southeastern San Francisco	8%	15% Drive alone 22 Carpool 1 Vanpool 27 MUNI 29 BART 4 Jitney 1 Motorcycle 1 Walk
Southwestern San Francisco	16%	11% Drive alone 6 Carpool 1 Vanpool 73 MUNI 10 BART
North Bay	8%	8% Drive alone 12 Carpool 1 Vanpool 7 Charter-Club Bus 55 Golden Gate Bus 16 Golden Gate Ferry 1 Tiburon Ferry
East Bay	32%	8% Drive alone 7 Carpool 5 Vanpool 55 BART 24 AC Transit 1 Charter-Club Bus
Peninsula	11%	22% Drive alone 12 Carpool 6 MUNI 28 BART 12 SamTrans 18 Southern Pacific RR 1 Jitney 1 Motorcycle

\* Primary Office Workers are defined as those who are employed in the following business activity groups: Mining & Manufacturing; FIRE; TCU; Government Office; Business and Professional Services.

Source: C-3 Employee Survey.

ALL C-3 SECONDARY OFFICE WORKERS:\*  
 AREA OF RESIDENCE BY MODE (JOURNEY TO WORK)

Northeastern San Francisco	3%	6% Drive alone 29 MUNI 30 Walk 35 Taxi
Northwestern San Francisco	13%	22% Drive alone 11 Carpool 63 MUNI 4 Motorcycle
Southeastern San Francisco	3%	28% Drive alone 44 MUNI 12 BART 16 Taxi
North Bay	5%	73% Drive alone 25 Golden Gate Bus 2 Tiburon Ferry
East Bay	10%	2% Drive alone 35 BART 63 AC Bus
Peninsula	20%	93% Drive alone and carpool 4 SamTrans 3 Southern Pacific RR

\* Secondary Office Workers are defined as those employed in the following business activity groups: Wholesale and Manufacturing Sales; Retail Services; and Branch Banks.

Source: C-3 Employee Survey

ATTACHMENT C

PUBLIC TRANSIT FINANCIAL RESOURCES

AVAILABLE TO SAN FRANCISCO BAY AREA OPERATORS





## PUBLIC TRANSIT FINANCIAL RESOURCES

Financial resources available to public transit are divided into three groups depending on their application:

- 1 - available for maintenance and operations only (M&O)
- 2 - available for capital improvement only (includes bond debt service)
- 3 - available for both M&O and capital improvement

Resources may be further described by source on a variety of bases...

...based on level of government from which they derive:

- Federal
- State
- Regional
- Local
- Transit Operator

...based on the kind of tax/fee/exaction from which they derive:

- Fares and others related to operations (eg. advertising)
- Investment income from cash reserves
- Property Tax/General Funds
- Sales Tax
- Gasoline Tax (sales and excise)
- Bridge Tolls
- Benefit Assessments/Joint Development Fees and other private sector exactions

...based on who is directly impacted by the funding source:

- Transit riders
- Property owners/Renters
- Retail consumers
- Vehicular owners/operators
- Transbay commuters
- Private developers/office space tenants

Given this report's objective of evaluating the financial feasibility of implementing actions contained in the Downtown Plan, source descriptions conform to those shown in MTC's RTIP.

#### FEDERAL

The Federal Surface Transportation Act of 1982 made fundamental changes in the allocation of federal capital and operating funds for transit. It also established for this first time ever a dedicated, recurring trust fund for transit capital expenditures deriving from a 5 cent increase in the federal gasoline excise tax, 1 cent of which is dedicated to transit capital. Four sections of that Act are the source of nearly all federal transit assistance in the form of grants. The first three are administered by the Urban Mass Transportation Administration (UMTA) - USDOT; the fourth by the Federal Highways Administration (FHWA) - USDOT.

(1) Section 9: Funded from General Fund appropriations, these are available for routine transit capital projects -- all bus capital and rail modernization and rehabilitation, including support -- as well as transit M&O. Capital grants require local matching money (any non-federal source) equivalent to at least 20% of the funded project cost prior to grant approval. A portion of Section 9 funds are also available for M&O; the Act specifies ceilings for each qualifying metropolitan area for M&O support, with specific apportionments delegated to the respective MTPA.

The inception of Section 9 more than any other single factor has assured the Bay Area region of significant increases in transit capital funding. The program is structured in annual block grants, distributed on a formula basis to qualifying metropolitan areas. The formula weighs intensity of system use along with relative population as criteria for apportionment. Transit systems in the Bay Area have relatively high levels of use by national standards, and under the new formula are attracting substantially higher levels of funding than under the previous programs.

(2) Section 3: Funded from the 1 cent gasoline tax in the mass transit account of the highway trust fund, these moneys are discretionary at the national level, and are intended to encourage major new transit investments, including "New Starts" (eg. BART extensions). Section 3 grants require a minimum 25% local match. In order to compete effectively for this money, local consensus (including the state) must be obtained on a project, an alternatives analysis completed to UMTA's satisfaction, and implementation plans including local financing sources for capital match and operations subsidy must be identified. Roughly 40 metropolitan areas nationwide are actively competing in this category, notably Los Angeles. Cost-benefit analyses, including potential ridership, land use impacts and other environmental mitigations are the primary criteria in trading off one metropolitan area against another. Political leverage is a significant factor here -- of course!

(3) Interstate Transfer Program: The Surface Transportation Act also authorized General Fund appropriations to transit capital each year for the four-year term of the bill corresponding to "deleted" segments of the adopted interstate highway system. Funding levels are pre-set for each of the four years, with discretion at the national level as to who gets how much and when. Local matching requirements are the same as for the highway projects they replace: 15% minimum.

The only pending interstate transfer in the Bay Area is the I-280 Transfer Concept Program in San Francisco, totalling \$90 million and proposed to be spent for a series of transit and highway improvements in the vicinity of San Francisco's Embarcadero waterfront.

(4) Federal Aid Urban (FAU) Highway Funds: These are the only grants directly available to transit deriving from the highway trust fund itself. Grants are channeled through the State Department of Transportation (CalTrans) rather than MTC. As with other highway programs, however, MTC concurrence must be obtained in advance -- a routine procedure to date. Local FAU com-

mittees comprised of state, regional (MTC) and local representatives decide on the programming of these funds each year. The only substantial transit capital investment of FAU funds in the Bay Area occurs in San Francisco. A 14% local match is required under FAU grant procedures.

Minor funding, particularly for planning and research under Section 6, are provided from other sections of the Act, but do not bear significantly on the long-term financial feasibility of transit improvement.

#### STATE

A series of legislative initiatives in support of transit capital financing have been forthcoming from Sacramento over the past decade. One of these, the Transportation Development Act (TDA) was authorized by the state but is totally controlled at the regional level -- by MTC in the Bay Area. This latter category will be labelled regional in nature. Three capital assistance programs remain either totally or partially under the state's direction, the administration of which is the responsibility of the California Transportation Commission (CTC):

(1) State Transit Assistance (STA) Program: This program is one of two funded from the Transportation Planning & Development (TP&D) Account of the State Transportation Fund. The TP&D Account exists because of TDA. The legislative intent of the original TDA in 1971 was that all tax revenues resulting from the extension of the state sales tax to include gasoline should accrue as to the "local transportation funds" established thereby. At the time of enactment, this equalled 1/4 % of all taxable sales. Since that time, the price of gasoline -- and thus sales taxes collected on it -- has advanced at a far greater pace than for all other taxable goods and services as a group. Because of this, a "spillover" fund was created in the latter 70's to accumulate this differential, most of which continued to go to the General Fund anyway. SB215 (1979-80) formed the TP&D Account, and formally earmarked these funds



for transportation, simultaneously weaning them from the General Fund. SB1335 (1981-82) specified their distribution based on a formula, and created the STA Program itself.

The STA Program represents 60% of TP&D Account revenues.

STA Funds are further split 70%-30%: 70% to RTPA's based on relative population for their discretionary allocation; 30% as a direct appropriation to transit operators based on relative "local effort," that being financial support from local sources including fares. The 70% STA funds are controlled by MTC in the Bay Area, which has to date appropriated them for capital purposes -- usually to match federal grant projects. The 30% STA funds are generally applied to M&O expenses by Bay Area transit operators.

(2) State TP&D Transit Capital Program: This program represents the other 40% of TP&D Account funds. Controlled directly by the CTC, this source is often used for intercity/interregional transit projects which lack local or regional sponsors. The BART/Amtrak intermodal terminal in Richmond is one example. This is also the primary source of state subsidy for Amtrak "403b" service -- intercity rail services operated by Amtrak but not part of its national network. The San Joaquin Valley trains between Oakland and Bakersfield rely on this source. Other appropriations to local transit initiatives, restricted to fixed guideway projects, are derived from this source at the discretion of the CTC.

(3) State Guideway Program (Article XIX): Derived from the State Transportation Fund out of state gasoline excise taxes and other motor vehicle collections, this is the only source of state transit support not derived from sales taxes on gasoline. The CTC retains authority to set aside and program these funds, which can only be spent on fixed guideway transit projects for capital purposes. Article XIX is the section of the State Constitution which was amended by state referendum (Prop. 5) permitting gasoline excise taxes to be used for transit capital for the first time, at

local (county) discretion. Bay Area voters in San Francisco, San Mateo, Santa Clara, Alameda and Contra Costa Counties subsequently approved this diversion, activating the provisions of Prop. 5 and permitting the CTC to program funds for guideway projects in these counties, usually as match to federal grants.

New pre-conditions imposed recently by the CTC for programming guideway funds requires recipient counties to have in place a local 1/2 % sales tax dedicated to transit, and to have some form of active private sector participation plan in the subject project's financial plan.

#### REGIONAL

The remaining transit capital resources established under state legislation, notably TDA, have accrued to the RTPA's or their county-level equivalents in non-urbanized areas. In the Bay Area, MTC has been the designated recipient for TDA and two other sources:

(1) Transportation Development Act (TDA) Program: As mentioned previously, SB325 (1971) established the TDA program by extending the state sales tax to include gasoline. The subsequent development of a "spillover" from this source due to rapidly escalating gasoline prices during the oil embargo and energy crises of the 70's has provided the basis for all other state transit support as well, with the one exception of Article. XIX (Prop 5). Another interesting aspect of TDA and sales tax on gasoline generally: Gasoline, including state and federal excise taxes totalling 18 cents per gallon in California, is taxed without regard to the excise tax component in the price. Therefore, in San Francisco for example, where the sales tax is 6 1/2 percent every gallon of gasoline contributes slightly more than 1 cent in sales tax strictly due to the excise tax component of the price (1.17 cent to be exact). A tax on a tax, in other words....!

TDA program funds are allocated at the complete discretion of MTC to transit operators and other qualifying recipients (eg. handicapped service

providers, CalTrans for bicycle path construction) as provided under amendments to the original Act. Local county and city highway departments are also eligible recipients if no unmet transit needs exist. All TDA funds in the Bay Area presently accrue to transit of other non-highway purposes.

Nearly all TDA funds are programmed for M&O purposes; some funds are nevertheless held for capital projects, matching federal grants where other sources are unavailable. Over the longer term, this source is presumed to be totally obligated to M&O expenses.

(2) Toll Bridge Surplus Revenues Program: Unique in the state, this program was created in its present form under AB664 (1976). Bridge tolls from the San Francisco-Oakland, San Mateo-Hayward and Dumbarton Bridges are collected in a San Francisco Bay Bridges toll fund, administered by the CTC. (Other toll bridges in the region excepting the Golden Gate contribute their revenues to other CTC-administered bridge funds; the Golden Gate is part of a separate special district: The Golden Gate Bridge, Highway and Transportation District). Bridge M&O expenses, including administration, are deducted from this fund, as are debt service obligations for construction bonds which paid for the new Dumbarton Bridge. The State Highway Account pays for all highway M&O expenses over the bridges as part of the state highway system.

Precedent was established for the use of toll revenues for transit when, in 1958, Key System train tracks were removed from the lower deck of the Bay Bridge to accommodate more vehicular traffic. The state agreed at that time to make toll revenues available should a future rail link to the eastbay need to be reestablished. With the decision to build BART in 1962 came a funding commitment from the state to pay for the transbay tube construction from toll bridge funds. The bonds that were floated for this purpose were paid off by the mid-70's, leaving a glut of revenues in the face of no bridge projects and an under-funded transit system.

AB664 empowered MTC to set toll rates on all Bay Area bridges (except the Golden Gate), and to allocate surplus toll revenues over and above bridge M&O and bond obligations for transit capital improvements "in the vicinity of bridge corridors." To date, MTC has diverted toll revenues to transit only from the San Francisco Bay Bridges toll fund. MTC retains a great deal of discretion in the application of these funds. As one example, bridge toll net revenues have underwritten bond debt service for the San Francisco Municipal Railway Improvement Corporation (SFMRIC - see Local resources) over the past several years.

(3) 1/2 percent Sales Tax in the three BART District Counties (AB1107 Funds): During the latter 1960s, it became clear during the course of BART system construction that insufficient funds were available to complete the approved system. The state, under great local pressure, permitted a one-time bond issue of \$150 million to be floated, secured by a "temporary" 1/2 percent sales tax override in the three BART counties. As these bonds neared their maturation in the mid-70s, it also became clear that BART would need an ongoing source of M&O subsidy. (The original system plan anticipated fare revenues adequate to pay all M&O expenses). Following several year-to-year emergency extensions of the tax override, the legislature approved AB1107 in 1977 which made the 1/2 percent sales tax permanent in the BART District counties. The bill earmarked 75 percent of those revenues for BART, with the remainder to be allocated among the three largest transit operators in the three counties -- AC Transit, Muni and BART -- at the discretion of MTC.

Further, AB1107 called for productivity and efficiency improvements in three-county transit services, established objectives for containing labor costs, and finally and most importantly, required the transit operators to recover at least 33 percent of their M&O expenses from fares and other operating revenues. It is this last provision which has empowered MTC to require periodic fare increases by the three affected operators in order for them to qualify for the



AB1107 monies. (MTC also has the discretion to permit averaging between the three operators in order to achieve this requirement). This represents an unprecedented authority for a regional entity to influence local political decision-making.

AB1107 funds, including the 75 percent dedicated to BART, are used almost exclusively for M&O expenses, and are anticipated to remain so.

As direct spin-offs of this legislation, 1/2 percent sales tax overrides were subsequently enacted in Santa Clara and San Mateo counties for the exclusive use of their respective transit districts. In neither of these cases does MTC have authority for allocation as in the BART counties.

#### LOCAL

Local sources are those over which city and/or county governments retain direct control. San Francisco's position as the hub of most of the region's major transportation corridors has over time, resulted in its resource base being subjected to regional influence more than any other individual county. Nevertheless, the City retains three major funding resources of its own, primarily for Muni:

(1) General Fund/Ad Valorem Taxes: San Francisco annually budgets general funds to sustain Muni's M&O expenses, the single largest source underwriting over half of Muni's \$150+ million budget. None of this money is allocated to capital except in extraordinary situations such as the recent bus purchase using \$20 million in surplus funds. San Francisco's General Fund represents a combination of property and sales taxes, business taxes, (e.g. payroll and gross receipts) fines, fees and all other operating revenues plus state and federal subventions, all collected by the City in the course of its normal operation. The Mayor and Board of Supervisors retain control over this source.

In other counties, equivalent resources generally take the form of specially dedicated property taxes to transit (eg. AC Transit), although

some municipalities contribute general funds to their respective transit systems in the absence of county transit districts (e.g. Santa Rosa).

(2) Hetch Hetchy Department (SFPUC): In the past, San Francisco's Public Utilities Commission, which oversees Muni, the Water Department and Hetch Hetchy power, has transferred net revenues from the "profitable" Hetch Hetchy to the "deficit-ridden" Muni in order to help finance capital projects, particularly those involving electrical distribution (eg. trolley overhead wire and feeder systems). In addition to continuing this capital contribution, Hetch Hetchy contributes an assured source of cheap electricity for Muni's electrically-powered services: trolleys, Metro and cable cars.

Hetch Hetchy sells hydroelectric power into PG&E's power grid out of its the Sierra Nevada facilities. It sells at a discount rate consistent with utility industry practices. In return, PG&E supplies San Francisco with power at the same low rate up to the amount sold to it by Hetch Hetchy. The great majority of this cheap power is consumed in the city by Muni. No other Bay Area county has access to this subsidization arrangement for power -- notably BART.

(3) San Francisco Municipal Railway Improvement Corporation (SFMRIC): Following several unsuccessful bond issue referenda during the 1960s to upgrade Muni, a non-profit corporation was created with the authority to raise money through the sale of bonds for the purpose of purchasing new Muni equipment. This equipment could then be leased back to Muni in return for annual "rent" payments equal to the debt service on the bonds. In this way, the expense could be treated as part of Muni's ongoing M&O budget, and not require a separate vote of the people consistent with Charter provisions. At the time, transit financing was a strictly local responsibility, so the debt issue had to be large enough to pay all costs of a substantial upgrading program.

A \$90 million bonding authority was thereby created by the Board of Supervisors, and the corporation began to market its bonds. A simultaneous increase in federal transit grants soon reduced the need for these funds, and marketing of bonds was halted at around the \$30 million level. Throughout

the modernization programs of the 70s, Muni relied almost exclusively on federal grants matched by regionally-provided monies from MTC, and more recently from state sources.

Continuing and more ambitious capital programs for Muni, as well as stronger competition from other Bay Area counties and cities for regionally-discretionary monies has forced a renewed consideration of this source. The authorization for another \$60 million in bonds remains intact, and is now actively programmed by Muni and SFPUC as a locally available capital improvement resource. No other local jurisdiction in the region has a standing bond authorization for transit. The capability to create new bond authorization exists with all major operators, but is constrained by 2/3 voter requirements embodied in state constitutional provisions as defined by Prop. 13.

#### TRANSIT OPERATORS

The transit operators themselves generate substantial revenues in conjunction with providing transit service. The most obvious source is fare revenue from riders, but other less apparent resources are also available:

(1) Fares: Fare rates are established by each transit operator's respective policy board, influenced most recently by MTC's AB1107 requirements in the BART counties, and by subsequent TDA requirements in the other counties. Fare revenues are applied strictly to M&O budgets by all transit operators. BART has recently floated a bond issue for new rapid transit cars predicated on a continuing surplus M&O budget, but this includes substantial contributions from sales taxes and other public subsidies.

Muni's fare structure is recommended by the Public Utilities Commission but authorized by the Board of Supervisors. Most other fare rates are established by transit district Boards of Directors -- with considerably less political pressure brought to bear -- even within elective boards (eg. BART).

(2) Advertising/Concession Revenues: Transit stations and vehicles are attractive to commercial advertisers due to the large numbers of people

passing through them. These revenues are uniformly applied to M&O. Substantial untapped potential exists here, as evidenced by SFPUC's pending "Advertising Shelter Program" for MUNI.

(3) Investment Income: In the case of transit operators with dedicated sources of tax support in excess of M&O needs (eg. BART), a standing surplus in the operating fund can earn a large return if invested in short-term securities. Prepaid passes, used exclusively by BART and heavily by Muni and other operators, provides "float" which can be invested as well. Money earned in this way routinely underwrites M&O needs.

Capital reserves, on the other hand (eg. excess bond funds) may be invested similarly and made available for capital investment at some future date at operator discretion.

Unfortunately, Muni cannot take advantage of either opportunity. As a department of City government, any surplus accruing from operations or capital budgeting is returned to the General Fund.

#### OTHER SOURCES

A variety of other public, quasi-public and private sector resources have been identified but to date, have played only minor roles in Bay Area transit financing:

(1) Sale-Leasebacks: Created under the Economic Recovery Act of 1982 and substantially scaled back since then, the purpose of this program for public transportation is to reduce the net cost of acquiring new rolling stock by selling depreciation rights to private corporations needing tax write-offs. The net effect for a public transit authority is capital cost savings ranging from 10 to 25 percent of total project costs. The federal government discovered they had created a huge drain on tax revenues with this program, and subsequently ended many of the Act's provisions. Public transit has been given some respite, however, as the modified law permits sales-leasebacks of transit equipment up to January 1, 1988. Both BART and



SFPUC/Muni are actively planning to use this mechanism for a portion of their respective five-year plan equipment purchases.

(2) Joint Development: Opportunities for joint development are generally limited to major transit terminal stations in central cities. Transit properties possessing valuable land parcels in these instances have a variety of alternatives if developers are interested:

- o Long-term ground or air rights leases may be offered to developers in return for constructing transit facilities as part of a new project, or in return for a stream of income accruing to the transit operator with no added facility, or both.

- o Mutually supportive and separate public and private projects may be pursued which generate maximum ridership and thus fare revenue to the transit operator. These can include convenient pedestrian connections between terminals and the development project, for instance.

(3) Benefit Assessment: This concept for transit financing presumes a special benefit accruing to property owners in the vicinity of transit facilities, usually major terminals or rapid transit stations, relative to other property owners further away from the facility.

Few successful examples of this technique can be cited (other than for redevelopment projects, e.g. Embarcadero Center) for transit improvements, if the assessment has been proposed following construction of the transit improvement. However, if considered as a prerequisite to building new transit facilities (e.g. rapid transit extensions), benefit assessments offer significant potential to help finance those facilities. Example: Given advance agreements, the Los Angeles Metro Rail project anticipates up to 20 percent of its total capital cost (\$600 million out of \$3 billion+) to be funded through a combination of benefit assessment and joint development revenues from the private sector.

(4) Other Private Sector Sources: The alternatives for direct transit subsidy sources from the private sector are limited, barring the imposition of unprecedented local policy. One such alternative is being actively considered in San Francisco at this writing.

A Transit Impact Development Fee, levied on commercial development upon issuance of an occupancy permit and based on useable square footage, would assess new development according to the increased peak period Muni ridership and thus capacity requirements resulting therefrom. That relationship, albeit highly theoretical and not recognizing the significant revenue generation from new development and business growth, has been quantified at \$5 per square foot. (The recently defeated Prop. M would have doubled this requirement). Given court approval of this measure, Muni stands to acquire \$40 million in accumulated levies to date, and between \$5 and 10 million annually thereafter.

Other direct assessment measures will no doubt be devised. On the whole, however, given the structuring of the public transit resource base as described in this section, the best guarantee for adequate funding is a thriving local and regional economy complimented by concentrated land use accommodating the majority of work trips on an efficient public transit system network.

end

ATTACHMENT D

MTC - RTIP EXCERPTS





**1984-88**



***Transportation  
Improvement  
Program***

**For the Nine County  
San Francisco Bay Area**

**MTC**

**Metropolitan Transportation Commission**

**June 22, 1983**

**Hotel Claremont • Berkeley, California 94705 • (415) 849-3223**



FY 1984-88 REGIONAL TRANSIT CAPITAL PRIORITIES  
SUMMARY (Thousand Dollars)

May 25, 1983

Operator	Phase I Annual Element (FY 1983-4)			Phase II (FY 1985-8)			Interstate		Prior		TOTAL
	Section 9 Block			Section 3 Discr			Section 9 (Total)	Section 3 (Total)	Transfer (Total)	Sec. 5 (Total)	
	Federal	Local	Total	Federal	Local	Total					
AC Transit	19,762	4,941	24,703				71,662				96,365
BART	27,285	7,945	35,230	36,969	12,323	49,292	131,489	618,309			834,320
CCCTA	719	365	1,084				6,696				7,780
Caltrans	2,905	3,786	6,691	18,863	6,288	25,150	23,320	72,830			127,991
GBBHTD	5,263	1,318	6,581				68,900				75,481
SF Muni	23,568	12,881	36,449	17,925	5,975	23,900	186,604	272,500	90,500		609,953
Santrans	5,942	1,485	7,427				42,770				50,197
Vallejo	2,736	684	3,420				1,292				4,712
SBCTD	12,120	3,030	15,150	38,187	27,312	65,499	65,150	146,450		4,633	296,882
TOTAL	100,300	36,435	136,735	111,943	51,898	163,841	597,883	1,110,089	90,500	4,633	2,103,681

FY 1983-4 FUND ESTIMATES (Million Dollars)

	UMTA Section 9	UMTA Section 3	UMTA Section 5	Art. XIX TP&D	STA	Bridge Tolls	Other Local	TOTAL
San Francisco-Oakland Urbanized Area	86.8	60.6		25.8 4.8 (a)	8.3	10	6.3	197.8 4.8 (a)
San Jose Urbanized Area	13.5	47.2	3.4	3.8 17.5 (a)	1.2		4.5	73.6 17.5 (a)
Total	100.3	107.8	3.4	29.6 22.3 (a)	9.5	10	10.8	271.4 22.3 (a)

(a) FY 1983-4 State funding.

ATTACHMENT E

MTC - RTIP EXCERPTS





62.

Preliminary Fund Estimate (Revised)  
Regional Transit Capital Program

ATTACHMENT E

	<u>1983/84</u>	<u>1984/85</u>	<u>1985/86</u>	<u>1986/87</u>	<u>1987/88</u>	<u>Total 5 year</u>
Sec. 9	136,735	208,171	154,013	117,702	118,497	734,618
Sec. 3	<u>163,841</u>	<u>401,454</u>	<u>280,037</u>	<u>366,979</u>	<u>61,620</u>	<u>1,273,931</u>
Total	300,576	609,625	434,050	484,181	180,117	2,008,549
Less:	PROGRAMMED NEW STARTS/EXTENSIONS					
<u>BART</u>						
Fremont Des.	--	21,310	--	--	--	21,310
Concord Des.	--	10,800	--	--	--	10,800
Fremont Const.	--	169,350	84,675	84,675	--	338,700
Concord Const.	<u>-----</u>	<u>63,500</u>	<u>31,750</u>	<u>31,750</u>	<u>-----</u>	<u>127,000</u>
Sub Total	--	264,960	116,425	116,425	--	497,810
<u>Caltrains</u>						
S.F. Ext. Loco	--	--	--	--	4,670	4,670
S.F. Ext. Elec.	<u>-----</u>	<u>-----</u>	<u>-----</u>	<u>-----</u>	<u>15,000</u>	<u>15,000</u>
Sub Total	--	--	--	--	19,620	19,620
<u>S.F. Muni</u>						
J-Line Const.	--	17,500	--	--	--	17,500
3rd/Bay des.	--	--	5,000	--	--	5,000
3ml/Bay Const.	<u>-----</u>	<u>-----</u>	<u>-----</u>	125,000	<u>-----</u>	125,000
Geary Des.	--	--	--	12,500	--	12,500
Geary Const	<u>-----</u>	<u>-----</u>	<u>-----</u>	<u>125,000</u>	<u>-----</u>	<u>125,000</u>
Sub Total	--	17,500	5,000	177,500	40,000	240,000
<u>S.C. County</u>						
Guad. R/W	23,333	--	--	--	--	23,333
Guad. Const.	31,250	--	--	--	--	31,250
Guad. Const.	<u>-----</u>	<u>66,250</u>	<u>45,250</u>	<u>33,950</u>	<u>1,000</u>	<u>146,450</u>
Sub Total	54,583	66,250	45,250	33,950	1,000	201,033
Total	54,583	348,710	166,675	327,875	60,620	958,463
Existing System	245,993	260,915	267,375	156,306	119,497	1,050,086
Less:						
Sec. 9	13,750	13,750	13,750	13,750	--	55,000
Guad. Proj.						
Existing System Capital Requirements (Line 16 on Preliminary Fund Estimate)	232,243	247,165	253,625	142,556	119,497	995,086



ATTACHMENT F  
BART FIVE-YEAR PLAN  
EXCERPTS





**BART CAPACITY EXPANSION PROGRAM**

Minimum Scheduled Headway	Projects Required to Achieve or Support This Headway	Project Completion Dates	Expanded Service Start Dates	Peak Hour Trains, Peak Direction Transbay	Peak Period Capacity On-Line		Spare Cars	Total Cars Required	Available Fleet A/C - Cars @ 85% B - Cars @ 90%	Operating Fleet Size
					Trains <sup>a</sup>	Cars				
3' 45"	Current Service	---	Jul 1980	16	43 <sup>b</sup>	318 <sup>b</sup>	40 <sup>b</sup>	358	368 <sup>c</sup>	436
3' 30"	Pending successful simulation & implementation of train control mods	Mar 1984 <sup>g</sup>	Jul 1984 <sup>g</sup>	17	45 <sup>b</sup>	327 <sup>b</sup>	40 <sup>b</sup>	367	371 <sup>d</sup>	439
	Fire Hardening (cars completed)	Jul 1985	Jul 1985	17	45 <sup>b</sup>	335 <sup>b</sup>	43 <sup>b</sup>	378	387	439
	Delivery of 32 C-cars	Mar 1986	Apr 1986	17	48 <sup>b</sup>	366 <sup>b</sup>	43 <sup>b</sup>	409	414	471
3' 10"	KE Track	May 1985								
	Fire Hardening (removal of vent separation)	Jul 1985								
	ICS	Jul 1986								
	Daly City Turnback	Aug 1986								
	Delivery of 78 additional C-cars	Jan 1987	Jul 1987	19	53	408	57	465	480	549
2' 30"	Daly City Yard	May 1987								
	New On-Board ATC	May 1987								
	Delivery of 40 additional C-cars (150 total)	Jun 1987								
	Primary Detection Project: Wayside ATC Modifications <sup>e</sup>	To be Determined <sup>f</sup>								
	To be determined based on System Performance Study	Completion of SPS, Jun 84	Jul 1988 <sup>g</sup>	24	62	437	62	499	514	589
2' 15"	To be determined based on System Performance Study	Completion of SPS, Jun 84	After 1988	26	74	452	62	514	514	589

- a. Number of consists on-line; throughput equivalent to one extra train (on Richmond/Daly City route).
- b. One 7-car consist is scheduled for revenue service but is reserved as a spare when required (Included in the "On-Line" column).
- c. Excluding 16 vehicles out for fire hardening and three damaged cars out awaiting repairs.
- d. Excluding 16 vehicles out for fire hardening; three damaged cars returned to service following completion of repairs.
- e. Includes PUC approval.
- f. Depend on results and recommendations of Train Detection Study.



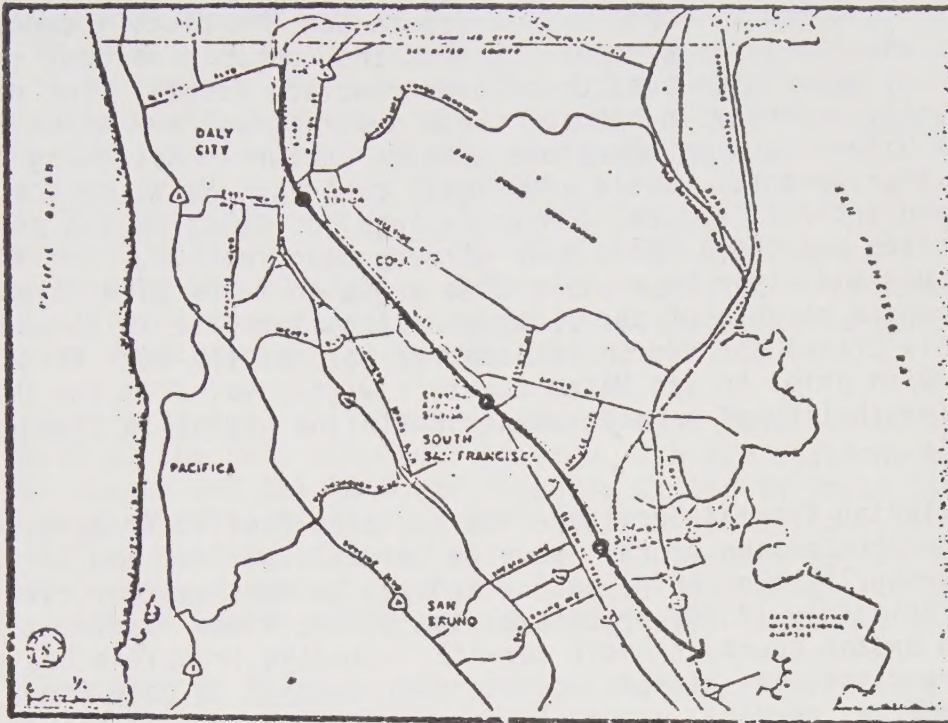


ATTACHMENT G

SFAAP PROJECT EXCERPTS

# SAN FRANCISCO AIRPORT EXTENSION (WEST BAY CORRIDOR, DALY CITY-MILLBRAE)

LAND-USE DATA: 1990 Corridor Population 267,586 1990 Corridor Employment 109,814



## DATA SUMMARY:

	1990 71-Mile Basic BART System	1990 SFAAP Extension Alternatives (1)		
		BART-SFO Direct	BART/LGT SFO Indirect	Express Bus
1. Average Weekday Ridership	254,000	66,000 305,500	63,000 302,500	14,500 267,000
2. Maximum Number of BART Trains on System	56	15 71	15 71	0 56
3. BART Fleet Size (A/B Cars)	141/434	40/113 187/547	40/113 180/547	0 141/434
4. Capital Cost (\$1979 millions)	3,750.6 <sup>(2)</sup>	679.3 4,429.9	552.8 4,303.4	8.4 3,759.0
5. Annual Operating Cost (\$1979 millions)	105.5	13.5 119.0	14.9 120.4	3.3 109.8
6. Op. Revenue/Op. Cost Ratio (%)	51.8	126.8 55.0	116.1 <sup>(4)</sup> 57.5	172.7 <sup>(3)</sup> 55.5
7. Minimum Transbay Headway (minutes: seconds)	2:44	2:44	2:44	2:44

NOTES: (1) The top figure in each pair applies only to the extension; the bottom figure is for the new BART system consisting of the extension plus the 71-mile basic system.

(2) Capital costs for the 71-mile basic system have been expressed in 1979 dollars by inflating annual construction costs and capital acquisitions. These costs include the current 10-year five-year capital improvement plan.

(3) Bus fares assumed \$1.50 between SFO and the Transbay terminal, .75 between SFO and Daly City via nonstop express and .50 between SFO and Daly City via limited stop run.

(4) Includes a .25¢ surcharge on the LGT line between the BART station and the airport.



ISSUES AND  
PERSPECTIVES:

Land development in San Mateo county, constrained by the Peninsula's coast-side topography, continues to reinforce highly concentrated corridor travel patterns. The county's bay plain has become the region's busiest transportation corridor, exhibiting a large, well-defined commuter shed. San Mateo county contributes more daily trips to San Francisco's central business district and its International Airport, the County's largest single employer, than any other area outside of San Francisco itself. The dramatic expansion currently underway in both of these destinations and associated impacts of automobile access is therefore a major factor in designing future transportation improvements. While additional capacity exists on the county's freeway and arterial system, limits on local circulation and parking in San Francisco and the airport have already been reached. Evolving environmental, land use and other objectives also argue in favor of alternatives to the automobile capable of absorbing the large increase in demand that is expected in this travel corridor. Included as part of the BART first phase implementation plan prior to San Mateo county's withdrawal from the District in 1962, the feasibility of a north county BART line was again studied in the early 1970's.

- Existing Transit Service - The Southern Pacific Transportation Company operates passenger rail service between San Jose and San Francisco, offering 22 round trips each weekday. Current weekday ridership is approximately 14,500 trips over the entire line. SamTrans is continuing to expand county transit service including trunkline bus service to San Francisco, the airport and the BART station in Daly City. In addition to SamTrans service, privately operated non-stop bus service is provided every 15 minutes between downtown San Francisco and the airport terminal. Ridership during 1977 averaged approximately 5,500 trips per day.
- MTC/RTP -- Transit improvements identified for the corridor include express bus service, a BART extension, commuter rail (S.P.) upgrade, and a fixed guideway shuttle connection to the airport from an upgraded S.P. line or BART extension. Most relevant to shorter range transit development is the recently completed Peninsula Transit Alternatives Project (PENTAP) which recommended better utilization of existing fixed rail transit facilities, addition of transit service to meet the needs of socioeconomic groups not adequately served at the present time, and preserving transportation facilities and options for longer range expansion and modernization.
- Institutional Relationships -- Current state legislation prohibits use of District funds to extend service outside of the three-member counties.
- Operational Feasibility -- BART service in this corridor would be a direct extension of the three transbay lines.

ALTERNATIVE  
DESCRIPTIONS:

Express Bus -- Regional bus service within the corridor is to be provided at three levels linking San Francisco Airport to the BART system and to downtown San Francisco. The first level of service is a limited stop run between the



airport and the Daly City BART station via El Camino (SR-82). Intermediate stops include: the airport maintenance base, Tanforan Shopping Center, Chestnut Avenue in South San Francisco and at Serramonte Boulevard in Colma. The frequency of service is to be every ten minutes during the peak period and every 20 minutes off-peak and during the late evening. The second level of bus service consists of a non-stop run between the Daly City BART station and the airport via I-280, I-380, and U.S. 101. The frequency of service is to be every ten minutes during the peak period and every 20 minutes off-peak. No late evening service is provided (the limited stop service operates during these hours -- 10 p.m. to 12 a.m.). Travel times for these two levels of bus service are estimated to be 25 minutes and 15 minutes for the limited and non-stop runs respectively between Daly City and the airport. The third level of bus service in this corridor is a non-stop run between the airport and the Transbay Terminal in downtown San Francisco. The frequency of this service is to be every ten minutes throughout the day with 15 minute late evening service and 30 minutes during the early morning hours (12 a.m. to 6 a.m.). Travel time for this route is estimated to be approximately 20 to 45 minutes depending on traffic conditions.

BART (Airport Direct) -- This rail improvement consists of a 9.7 mile extension south of the Daly City BART station with new stations provided at Colma, Chestnut Avenue and the Tanforan Shopping Center in South San Francisco, San Francisco Airport terminal, and Millbrae. A new Westbay yard is also included south of the Millbrae station. A three minute peak period headway is to be provided between Millbrae and Oakland West. Off-peak service is every four minutes with 15 minute Millbrae/Concord service between 7 p.m. and 1 a.m.

BART/LGT Connector (Airport Indirect) -- This extension is similar to the airport direct line except that south of the Tanforan station the alignment continues along the Southern Pacific right-of-way. Service to the airport is provided via a light guideway transit connector (people mover) from a BART station located immediately west of the U.S.-101/airport access roadway intersection. BART service is to be the same as in the airport direct line. The LGT service frequency would vary between one and 15 minutes depending upon the demand. A separate storage/maintenance facility is included for the LGT line in addition to a Westbay BART yard. Southern Pacific connections are provided within the airport and Millbrae stations.

IMPACTS:

Basic BART System -- Extending BART into northern San Mateo county will effectively tap a large well-defined travel market. This should have a positive impact on BART's Westbay capacity utilization as peak hour load factors increase from well below 1.0 to approximately 1.3. The bus alternative is estimated to have no negative impact to the basic system operations. The addition of a Westbay storage and maintenance yard as included in both BART extensions is expected to provide an increased level of operational reliability and flexibility benefiting operations over the entire BART system.

Performance/Land-Use -- Each of the airport extension alternatives serves essentially the same population and employment base. The bus improvements serve the airport maintenance area as well as the air passenger terminal whereas the BART alternatives serve only the passenger terminal. BART on the other hand





would provide an effective interface with SP, permitting through Peninsula travel. The bus improvements do not include this consideration although it can be incorporated into the service at the expense of longer travel times. For off-peak travel between most downtown San Francisco locations and the airport, the non-stop bus service is estimated to provide faster and in many cases more convenient service since considerations for luggage are to be included in bus design. BART is more commuter oriented providing much greater carrying capacity than the bus improvements and should provide a viable alternative to auto travel particularly during peak hours. Higher capacity and multi-destination opportunities via BART therefore offers the potential for partially relieving access demands of both downtown San Francisco and the airport. The presence of BART stations in northern San Mateo county should provide greater reinforcement to established centers than under the bus alternative. All of the alternatives are considered to be compatible with surrounding land uses owing to the fact that this is already a well established travel corridor.

Environmental -- Energy requirements and pollutant emissions per passenger mile are as follows:

<u>Basic System Plus</u>	<u>BTU's</u>	<u>Grams HC+CO+NOx</u>
-BART (direct)	1,989	0.420
-BART/LGT	2,041	0.431
-Bus	1,998	0.484

Social, Economic and Community -- A high level of automobile generated noise will for the most part tend to mask the additional sound generated by the alternatives, particularly for the bus improvements which follow major highways. On a comparative basis BART will have a greater negative impact particularly where the alignment is either at or above grade and located away from major traffic arteries. The direct airport BART line is estimated to have a lower negative impact as a result of the subway alignment between Tanforan and Millbrae. Implementation of the bus alternative should not create any disruption or permanent displacement. The BART alternatives are estimated to remove approximately 64 housing units and 12 businesses and some temporary construction related disruption is anticipated. This latter concern is expected to be at a moderate level for the direct airport line as a result of subway construction under the airport. Vehicular circulation impact is expected to be at a greater level for the BART alternatives. This, however, must be viewed in terms of congestion/relief at the airport access roadway, on certain segments of the Bayshore Freeway, and partial easing of downtown San Francisco street demands and parking pressures.